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# South Missouri Water Quality Project

## 2006 Annual Progress Report

*A Review of Fiscal Year October 1, 2005 — September 30, 2006.*



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This document is a publication of the South Missouri Water Quality Project, Natural Resources Conservation Service (NRCS) of the U.S. Department of Agriculture. NRCS works in partnership with the American people to conserve and sustain natural resources on private lands.

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Cover Photo: Cowards Hollow Natural Area is located in Carter County and feeds into the Current River. Cowards Hollow Natural Area has a number of significant geological features as well as natural plant communities.

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# Welcome Watershed Stakeholders

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**Steven G. Hefner, Team Leader**

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It is my pleasure to present this annual report, detailing efforts made by the staff of the USDA-NRCS South Missouri Water Quality (SMWQ) Project and its conservation partners to improve the water quality of the Upper White River Basin. Now in our third year of existence, we continue to evaluate our operations in order to respond to our changing world. Whether educating the public about water issues through outreach events, or providing detailed conservation plans for property owners, our goal is to enlighten southern Missourians about conserving and protecting water resources.

In a speech made to the Wisconsin State Agricultural Society in 1859, President Abraham Lincoln used agriculture to discuss the importance of efficiency. Lincoln asked, "What would be the effect upon farming interest to push the soil up to something near its full capacity?" He later concluded that such efficiency would enhance independence and remove societies from the threat of oppression.

Our affiliation with the network of USDA Service Centers throughout the watershed enhances our ability to operate efficiently. By assisting private landowners with conservation planning and installation, the assistance extended through the SMWQ Project has resulted in tangible land stewardship. From the installation of riparian buffers, to writing nutrient management plans for both farms and residential properties, to decommissioning abandoned wells, the implementation of these conservation practices will serve to safeguard water resources for the public.

Looking over the past year, we directed significant outreach efforts into the eastern half of the watershed. New efforts included arranging outreach meetings with potential conservation partners, collaboration with agricultural researchers to address local natural resource concerns, and area-wide watershed planning to bring sponsoring organizations financial resources for water quality conservation.

We desire to utilize the resources provided to us to reach those who need them, in a manner that has the maximum impact. As you review the details of this report, please feel free to contact our office either directly or by way of your local USDA Service Center if you have questions or need conservation assistance.

Team Leader, South Missouri Water Quality Project

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## Mission and Purpose

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The mission of the South Missouri Water Quality Project is to provide voluntary conservation technical assistance to both rural and urban people to improve water quality in the Upper White River Basin. Input and oversight is provided by a local steering committee comprised of stakeholders with various interests in water quality. Conservation technical assistance is provided by an interdisciplinary staff of professionals to landowners, municipalities, local watershed groups, farmers, and businesses to promote stewardship of natural resources.

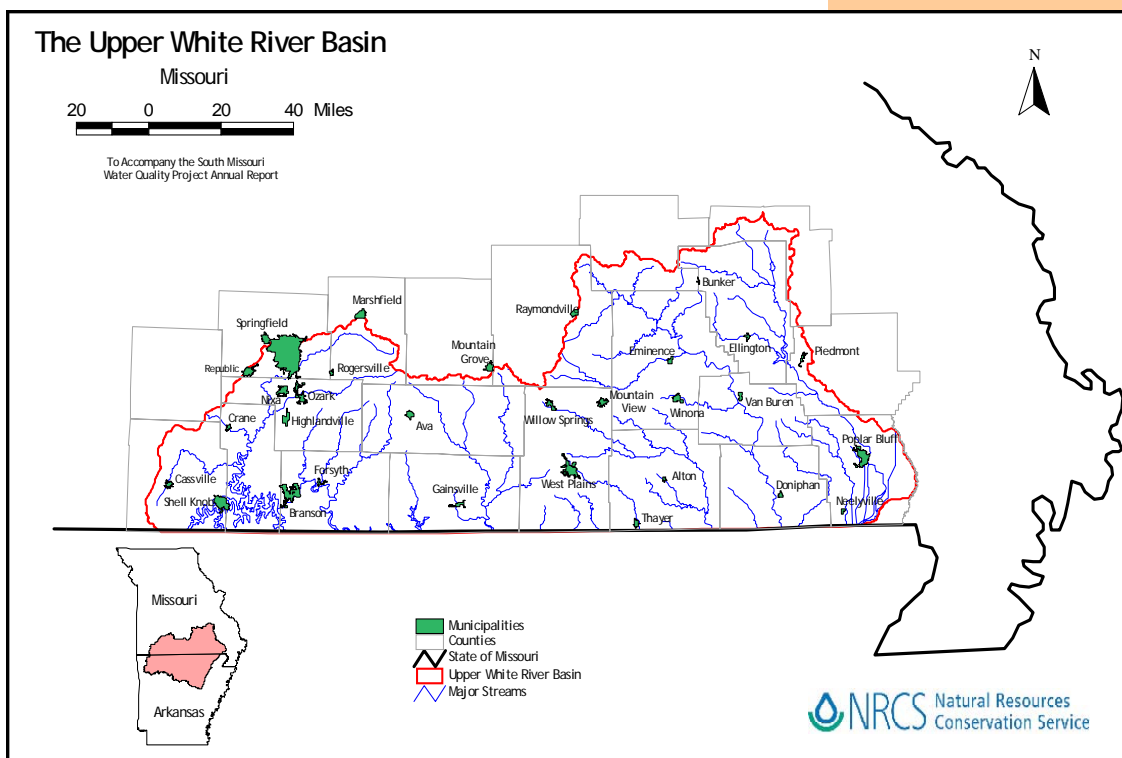


# Project Area

The Upper White River Basin, located primarily in the U.S. Interior Highlands region, is a 6 digit hydrologic unit (#110100, U.S. Geologic Survey) in Missouri and Arkansas comprising about 14.3 million acres. Runoff from the Upper White River Basin is received by the Lower White River Basin in Arkansas and eventually empties into the Mississippi River. Locally known as “the Ozarks,” this ancient land form has been subjected to erosion that has left summits where resistant rock persists and valleys where runoff found less resistance from the land.

The state line divides the Upper White River Basin roughly in half with 47% of the land mass in Missouri and 53% in Arkansas. The project area for the South Missouri Water Quality Project includes land where the basin intersects 21 Missouri counties. The majority of the project area lies in the Ozark Plateaus, with a small portion in the Mississippi Alluvial Plain. Timber and livestock production are prevalent in the Ozark Plateaus, while deep soils and artificial drainage provide excellent row crop production in the Mississippi Alluvial Plain.

***Since 1935, USDA-NRCS, formerly the Soil Conservation Service, has provided technical assistance to landowners. In 1937, NRCS began planning and implementing voluntary conservation practices through soil and water conservation districts.***



***South Missouri Water Quality Project Area***

# Steering Committee

**Wendell Still**  
Ozark County

**Gaylon Watson**  
Wayne County

**Dennis Avery**  
Butler County

**Kathryn Braden**  
Taney County, Chair

**Dwayne Cartwright**  
Texas County

**Becky Day**  
Howell County

**Robert Dettmer**  
Iron County

**Charlie Erickson**  
Oregon County

**Paul Gilgen**  
Shannon County

**Kay Golden**  
Texas County

**David Morrison**  
Ozark County

**Matt Morrow**  
Greene County

**Debbie Redford**  
Taney County

The success of any water quality endeavor hinges upon public support, guidance, and participation. An advisory committee, comprised of Upper White River Basin citizens, was formed in July, 2004 to offer assistance to the South Missouri Water Quality Project. The committee is inclusive of individuals and community leaders who represent the

broader spectrum of stakeholders having an interest in the quality of the basin's water and the economic viability of the region. Members of this committee provide input and suggest non-point issues that merit attention. Individuals have been recruited from various regions of the project area and serve as unpaid volunteers.



*Steering Committee Meeting in Poplar Bluff*

*May 2006*

*"Serving on the Steering Committee has been an honor for me. I've been particularly impressed by the diversity of representation on the committee and the different perspectives on water quality which come to the table each time we meet. I've enjoyed hearing the conception of an idea and watching a very professional staff take it and make it into a reality. The staff is dedicated and passionate about what they do which is clearly reflected in their accomplishments. I hope to see the South Missouri Water Quality Project continue to show and tell people from farmers to business owners to school children how they can make a difference when it comes to protecting water quality."*

*Debbie Redford*



**Debbie Redford,**  
**SMWQ Project**  
**Committee Member,**  
**Taney County**

# Water Quality Staff



*From Left Front Row: Steve Hefner, Mary Giles, Clay Robertson  
Back Row: Robert DeMoss, Adam Coulter*

**Steve Hefner**, Team Leader, is responsible for staff administration, nutrient management, and watershed planning. He has agronomy experience with row crops and livestock production systems. Prior work assignments include public service with USDA-NRCS in an Irrigation and Water Quality office, and agricultural research with the University of Missouri Delta Research Station.

**Mary Giles** markets the technical services of the staff, and coordinates water quality education and outreach activities by facilitating opportunities for community involvement. Her past experience includes organizational communication and public relations in non-profit organizations.

**Clay Robertson** has 26 years of soil conservation experience at various locations in Missouri. As a Resource Conservationist, he assists agricultural and urban producers with

nutrient management planning, erosion control, and conservation planning.

**Robert DeMoss**, is a Forester with expertise in tree planting and forest thinning. He can assist with restoring declining habitats such as glades and savannas, establishment and protection of stream corridors, wildlife habitat improvement, and the decommissioning of abandoned wells. Previously he was a District Forester for an industrial timber and lumber manufacturing corporation.

**Adam Coulter**, Urban Conservationist, works with local planning and zoning departments, public works officials, developers, and citizens within the White River Basin to facilitate urban conservation practices. Previously Adam was Development Coordinator at the Watershed Committee of the Ozarks. He currently teaches part-time at Missouri State University.

***"Character is like a tree and reputation like its shadow. The shadow is what we think of it, the tree is the real thing."***

**Abraham Lincoln**

# Urban Resource Planning

***“If the city is not well designed, its impact on the surrounding nature will be lethal.”***

***Javier Cenicacelaya***



*Urban flooding and erosion in Howell County*

## **Specific Accomplishments Addressing Urban Non-Point Issues:**

- Co-sponsor with the Howell County Soil and Water Conservation District, City of West Plains, and the Great Rivers Chapter of the International Erosion Control Association, a workshop in West Plains focusing on storm water management and sediment and erosion control.
- Continued assistance to the City of West Plains regarding the development of a storm water committee. During this fiscal year, local members were recruited with organizational meetings planned for FY 2007.
- Designed and installed a rain garden in Galloway Park with the Howell County SWCD and the City of West Plains.
- Released a revised version of the Turf Resource Inventory and Management for Nutrients Spreadsheet (TRIM-N) for preparing Urban Nutrient Management Plans.
- Prepared 65 urban nutrient management plans for residential lawns throughout the James River watershed as funded by a grant administered by the James River Basin Partnership.
- Conducted an Urban Lawn Satisfaction Survey for individuals that received an urban lawn nutrient management plan. Over 95% of the participants found the nutrient management plan easy to understand and follow. Results indicated 86% of program participants changed lawn care management.
- Completed a water budget for a homeowners association in Springfield related to a constructed lake within the development area.
- Provided conservation planning for a proposed animal shelter in Christian County.
- Prepared a conservation plan for the City of Ozark to address storm water runoff and sedimentation issues at Chickasaw Park.
- Prepared a wellhead protection plan for the City of Ava as required through the Safe Drinking Water Act which was subsequently approved by the Missouri Department of Natural Resources.
- Provided technical assistance for the City of West Plains on improper drainage issues in the Fairfield and Broadway Avenue district.
- Assisted landowners in Christian and Howell Counties on erosion issues by writing individual conservation plans.
- Wrote a comprehensive conservation plan for the Glennwood School District for implementing urban conservation practices on the school campus.
- Continued cooperating with the University of Missouri Extension's program on providing training to local realtor boards related to on-site waste water issues.



# Forestry Assistance

***“Conservation is the application of common sense to the common problems for the common good.”***

***Gifford Pinchot***

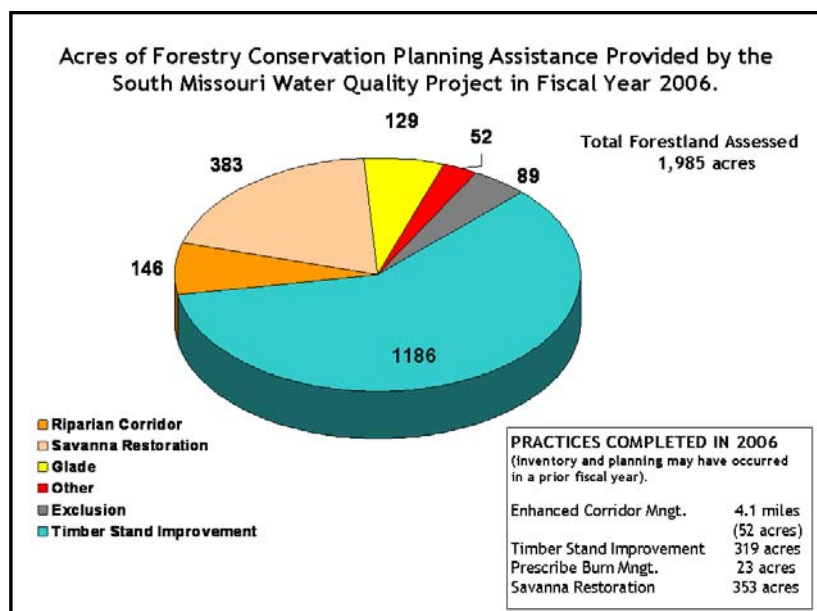
Most southern Missouri landscapes are well suited for trees. Conservationists with the South Missouri Water Quality Project constantly promote the benefits of timber management. Landowners receive conservation plans that include specifics regarding which tree species should be planted or removed, suitable site preparation, planting densities, the feasibility of regeneration, or the restoration of declining habitats. Recommendations are science-based and are developed following a site visit to learn the objectives of each landowner and the current forest conditions.

Voluntary federal, state, and local cost-share programs are offered to private landowners in order to implement several of these forestry conservation practices. Examples of programs that include financial incentives for forestry are the Environmental Quality Incentive Program (EQIP), Wildlife



*Savannas are transitional landscapes between tall prairies and deciduous forests.*

Habitat Incentive Program (WHIP), Continuous Conservation Reserve Program (CCRP), Agricultural Non-Point Source Special Area Land Treatment (SALT), and 319 funds through the Clean Water Act. The Staff Forester is available to explain or provide guidance through these programs. Forestry technical assistance can also be provided independent of any program participation.



# Water Resource Protection

Weather conditions significantly influenced agricultural production in Missouri in 2006. Rainfall shortages which initiated in the spring of 2005 persisted into the 2006 growing season and decreased forage and hay production, especially in the southwestern counties. By August 2006, the Palmer Drought Severity Index Rating for this area was listed as 'Extreme' (Figure 1). Inspection of 30 year weather records from 1971-2000, indicated that rainfall received from December 2005 to November 2006 was below normal for 11 of the 21 counties in the Upper White River Basin of Missouri (Guinan, 2006). In Christian County alone, rainfall deficits for this same period exceeded 14 inches.

In response to this drought, the USDA Farm Service Agency was successful in se-

curing financial assistance through the Emergency Conservation Program for several counties in Missouri. Locally, staff of the South Missouri Water Quality Project assisted the Farm Service Agency in preparing designs for pipelines and watering tanks for livestock producers facing water shortages in Christian, Stone, and Taney counties.

## Specific Accomplishments:

- In response to the drought, SMWQ staff assessed 96 farms, designed 100 pipelines, and certified 38 installations in Christian, Stone, and Taney Counties in conjunction with the Farm Service Agency through the Emergency Conservation Program.

***"There are two spiritual dangers in not owning a farm. One is the danger of supposing that breakfast comes from the grocery, and the other that heat comes from the furnace."***

***Aldo Leopold***

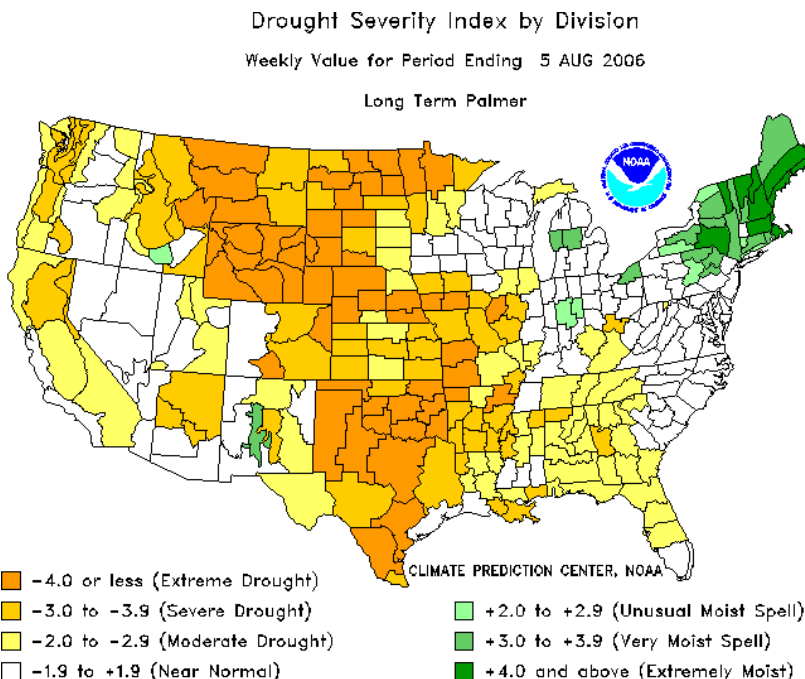


Figure 1.

*Drought conditions of the United States for the week ending August 5, 2006. Data from the National Oceanic and Atmospheric Association (NOAA).*

## Reference:

Guinan, P. 2006. Drought Information—12 Month Departure from Long-term Average. University of Missouri Agriculture Electronic Bulletin Board.

# Water Resource Protection

***“Man—despite his artistic pretensions, his sophistication, and his many accomplishments—owes his existence to a six inch layer of topsoil and the fact that it rains.”***

***Unknown***

- Assessed 1,298 acres of farmland for Nutrient Management Plans in Christian, Stone, Taney, and Greene counties.
- Cooperated with the University of Missouri Delta Research Center to conduct a soil fertility test on grassland. This is the third year of eight year project to validate phosphorus and potassium soil recommendations. Information from the project will be incorporated into forage conferences and nutrient management schools for local landowners.
- Inventoried three abandoned wells and decommissioned 7 wells that were planned in a previous fiscal year to protect ground water resources and remove human and livestock safety concerns.
- Co-assessed, with the USDA-NRCS Irrigation and Water Quality Office, nine irrigation evaluations in Ozark and Barton Counties.
- Conducted over 100 interviews with landowners interested in the Conservation Security Program (CSP). The CSP is a voluntary program that provides financial and technical assistance to producers who advance the conservation and improvement of soil, water air, energy, plant and animal life, and other conservation purposes on tribal and private working lands.



*Installation of well, pipeline, and tank for livestock water through the Emergency Conservation Program.*

# Watershed Planning

***“When we try to pick out anything by itself, we find it hitched to everything else in the universe.”***

***John Muir***

USDA-NRCS watershed planning is an adaptation and extension of assistance typically provided to individual property owners. The process is led by local citizens working with government agencies to address local resource concerns through voluntary incentive based planning. The SMWQ assists locally led organizations who advocate voluntary stewardship of land and water by providing natural resource information and assessments, cartography, overall watershed planning assistance, and financial assistance through various programs for land treatment.

## **Specific Accomplishments:**

- Assisted the Howell County SWCD prepare a 319 Water Quality Grant for the Spring River Watershed in Howell and Oregon counties.
- Assisted the City of Ava in Douglas County prepare a Source Water Protection Plan.

- Collaborated with the University of Missouri Food and Agricultural Policy Research Institute (FAPRI) to conduct SWAT computer modeling of the James River Basin. The analysis fulfilled a 319 Water Quality grant requirement sponsored by the James River Basin Partnership.
- Compiled a watershed profile for the Taney County SWCD for the Brushy Creek Watershed.
- Assisted the Butler County SWCD prepare a 319 Water Quality Grant for the Black River Watershed.
- Completed the restoration component of a 5 year 319 Water Quality Grant sponsored by the James River Basin Partnership that included the installation of grazing systems, riparian corridors, rural and urban nutrient management planning, sinkhole and woodland protection, pasture improvement, well decommissioning, and septic tank maintenance (See Table 1).

<u>Restoration BMP</u>	<u>Amount Completed</u>	<u>% of Project Goal</u>
• Urban Nutrient Management	313 (no.)	104%
• Septic Tank Maintenance	125 (no.)	250%
• Riparian Corridor	115,572 linear ft.	115.6%
• Planned Grazing System	5,633 acres	102%
• Pasture Improvement	10,422 acres	105%
• Rural Nutrient Management	24 (no.)	160%
• Woodland Protection	664 acres	133%
• Well Decommission	20 (no.)	111%
• Sinkhole Protection	3 (no.)	100%

*Table 1. Restoration practices completed in the James River Basin 319 Project.*



# Watershed Planning

- Partnered with the Christian County SWCD to conduct a riparian corridor assessment for the Middle Finley River Watershed. The effort supported a 319 Water Quality Grant sponsored by the SWCD and identified areas where the best opportunity for conservation existed along the river. (See Figure 1)
- Produced 20 cartography map products in support of watershed activities. Map products were presented to SWCDs, Resource Conservation and Development Councils (RC&Ds), and University Extension to support web sites, grant milestones, brochures, and public meetings.

***History celebrates  
the battlefields  
whereon we meet  
our death,  
but scorns of the  
plowed fields  
whereby we thrive.***

***Jean Henri Fabre***



Figure 1. Photo of the Finley River in Christian County

- Co-Authoring a successful Cooperative Conservation Partnership Initiative national grant application to conduct Rapid Watershed Assessments in Missouri. Two of the five proposed watersheds, the *Current* and *Upper Black*, are located in the Upper White River Basin.
- Conducted 22 dry hydrant investigations for local fire districts in support of a Grant Program administered by the Southwest Missouri RC&D.

# Professional Training

One of the functions of the South Missouri Water Quality Project is to educate and train interested individuals in natural resource protection as it relates to water quality. Staff members have expertise in nutrient management, urban conservation, forestry, geography and mapping, public relations, and soils. Knowledge empowers people to create change, and sound training in conservation is a service provided by this office. Staff members may serve as guest speakers for outreach meetings, lectures, and training sessions when the events support the mission of the office.

## Specific Accomplishments:

SMWQ staff assisted local entities with an interest in improving regional water quality by participating in the following events as a co-organizer, trainer, or speaker.

- Presentation to the Ozarks Heritage Regional Economic Council (West Plains)
- Missouri State University Land Use Planning Seminar
- Missouri State University Resource Planning Seminar
- Community Partner in the Southwest Missouri State University Service Learning Program
- Training in the development of Early Childhood Education Curriculum, Ozarks Technical Community College
- Realtor Septic Tank Training

- USDA-NRCS MLRA Karst Mapping Project for Southwest Missouri
- Regional Envirothon competitions
- Taney County Well Decommissioning and Riparian Forest Buffer Workshop
- On-the-Job Well Decommissioning Training to Howell County employees and volunteers
- River Rescue, James River Basin Partnership Public Relations Event
- James River 319 Final Public Meeting
- Ozark County Forestry SALT Workshop

***"The beautiful thing about training is that no one can take it away from you."***

***B.B. King***



*Steve Hefner, SMWQ Team Leader, provides conservation training to students at Ozarks Technical Community College in Springfield.*

# Outreach Activities

***“Every segment of our population, and every individual, has a right to expect from his government a fair deal.”***

***Harry Truman  
Speech to Congress  
September 6, 1945***

The featured quote was first made to the Congress by Harry Truman, 33rd President of the United States, on September 6, 1945. Truman, a man of straightforward character, did more than just vocalize this statement. After more than 50 years of inaction, he organized a Presidential Commission on Civil Rights and urged Congress to act upon a detailed 10 point agenda. In a congressional atmosphere where it was difficult to push his agenda, he used executive power to significantly forward civil rights issues. Truman was the first president to appoint an African American judge, William Henry Hastie III, to serve on the federal bench. He also used executive orders to desegregate the US armed forces.

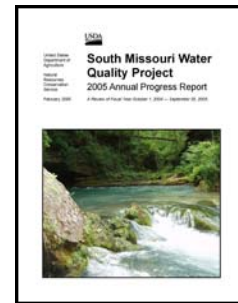
Truman's remarks capture our philosophy of conduct as public servants. Our commitment to civil rights is not only rooted in USDA policy, but an inward belief in “equal public service for all”. Our outreach efforts include activities to target information to new segments of society that have not traditionally participated with the agency.

## Specific Accomplishments:

Reduced work load by securing 1,926 hours of labor from 80 volunteers (0.92 staff year) through promotion of the USDA Earth Team Program to assist in program delivery, and to access human talent and services not readily available at the field level.

## Web-based:

- Produced an Annual Report (15 pages) and posted on the USDA State Office web site at: <http://www.mo.nrcs.usda.gov/news/images/SOMOWaterquality2005.pdf>



- Published two issues of the *Upper White River Review* newsletter and posted on the USDA State Office web site at: <http://www.mo.nrcs.usda.gov/news/mowaterquality.html>
- Utilized the College Central Network of Drury University and Ozarks Technical Community College to recruit Earth Team volunteers. The home page address can be located at [www.collegecentral.com](http://www.collegecentral.com).



*Carlynn Forst, Earth Team volunteer recruited through College Central Network*

# Outreach Activities

## Visual graphics projects created to convey the conservation message:

- Cooperated with OTC to produce an early childhood video project (*see inset*)
- Creative conservation paper foldout project for a local Girl Scout group
- Conservation Posters for Douglas and Howell County SWCDs
- Texas County Women in Ag Brochure



Don Innes, SMWQ Volunteer

Don Innes, a retired insurance professional, recorded the voice-over for the Early Childhood Education Video and said this about the project:

*"I felt honored to be asked to contribute my time and energy to this project which will assist in educating future generations about stewardship of our natural resources."*

## Media projects published featuring South Missouri Water Quality services and activities:

- Ellington Courier Newspaper (Early Childhood Program)
- USDA Volunteer Voice National Newsletter (Early Childhood Program)



- MFA Today's Farmer Magazine (Entire Office Featured)
- Springfield 28 Television Interview and Webcast (Urban Conservation)

- OTC Eagle, Student Newspaper (Early Childhood Program)
- MSU CASL Annual Report (Service Learning Program)
- Springfield NewsLeader (Early Childhood Program)

## Recruitment-based:

- Personal outreach visit to each Soil and Water Conservation District in the Upper White River Watershed to market office services.
- Sent recruitment letters detailing the Early childhood Program to 131 childcare facilities in the watershed.
- Ozarks Technical Community College Job Fair to recruit Earth Team volunteers, 500 contacts

## Thank You Note Received

*A very special thank you for taking the time for such a wonderful program presentation. It was great and hope you will come back!*

*Judy Rains  
Reynolds County*



# Earth Team Activities

## Water Quality Staff Earth Team Award Recognition



The staff of the South Missouri Water Quality Project received the **Chief's National Field Office Earth Team Award** and the **Missouri Earth Team Award** for 2006 for their development of innovative Earth Team projects coordinated through the water quality office.

**80 volunteers** were recruited as **Earth Team** volunteers for the **South Missouri Water Quality Project** and contributed **1926 hours** of service on various projects during 2006

The Natural Resources Conservation Service has been providing an opportunity for volunteers to utilize their talents on behalf of conservation for over two decades through the Earth Team Program. The mission of the Earth Team Volunteer Program is to provide leadership for a volunteer workforce that conserves, protects, and sustains our natural resources.

Earth Team volunteers are an integral part of the NRCS conservation team. They provide a variety of skills and talents as they join professional conservationists in helping farmers and landowners in both rural and urban areas conserve the earth's natural resources.

### Specific Accomplishments:

- The *Upper White River Watershed Cartography Project* was completed by Brandon Haddock, Earth Team Volunteer and Missouri State University Service Learning student. The project involved using

Geographic Information Software to construct a watershed map of the Upper White River Basin, including the illustration of counties, rivers, cities, towns, roads, soils and census data for approximately 6.7 million acres.

- The *Rural Water Source Cartography Project* illustrated statewide locations of water sources for fire protection. The project was authorized under a US Forest Service Grant administered by the Southwest Missouri Resource Conservation and Development Council, which provided funding for the installation of dry hydrants on private land. In a partnership with the Missouri State University Service Learning Program, Brittany Baker assisted the SMWQP staff develop cartography map projects through the utilization of Geographic Information Software. Brittany's statewide map illustrates locations of rural water sources.



The **Conservation Dictionary** project, an electronic translation resource for USDA Service Centers in Missouri containing terminology specific to conservation, was initiated in 2005. In 2006,

work on the project continued with Earth Team Volunteer Lauren Schuster completing the Spanish translation through a partnership with Missouri State University Service Learning Program. Future plans are to coalesce this information and release the project to southern Missouri field offices in 2007.

# Earth Team Activities

## LOCAL EDUCATORS RECEIVE COVETED PARTNERSHIP AWARDS

Dr. Denise Cunningham, Professor at Missouri State University, and Donna Graham, Instructor at Ozarks Technical Community College, received USDA-NRCS Partnership Awards for their collaboration with the SMWQ Project Office. As a result of their participation in the SMWQ Early Childhood Education Program, 57 Earth Team Volunteers have been recruited into public service. By adapting their course curriculum to include a water conservation component, the volunteers made 63 classroom presentations to over 980 children. Their volunteer time invested through our partnership over the past 18 months represents over 159 working days distributed in 35 educational centers in 7 communities. Surely, USDA could not have accomplished this alone without sacrificing other critical missions.



*From left: Roger Hansen, State Conservationist, Dr. Denise Cunningham, Early Childhood Education Professor at Missouri State University, Donna Graham, Children's Literature Instructor at Ozarks Technical Community College.*

## Early Childhood Education Program



*Danielle Bales teaches a lesson about pollution and its affect on water quality.*

Continued implementation of a Water Quality Early Childhood Education Program to educate the youngest citizens of the watershed. Sixty-four Earth Team volunteers presented age appropriate, pre-approved water quality curriculum to 782

students at 30 different early learning or daycare centers in 7 local towns in the watershed. Students were issued water quality fact sheets targeting adult guardians detailing services provided by the office.

## Thank You Note Received

*Thank you for the great presentations you and the two students gave our center. The children had fun learning about water. We appreciated all the hard work and time the students dedicated to this project.*

*Debra Underwood  
Webster County*



*Kashina Ince reviews her story book about the water cycle with excited learners.*